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L8 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:737134 HCAPLUS

DOCUMENT NUMBER: 141:389554

TITLE: Potent hydroxyl radical-scavenging activity of drought-induced type-2 metallothionein in wild watermelon

AUTHOR(S): Akashi, Kinya; Nishimura, Noriyuki; Ishida, Yoshinori; Yokota, Akiho

CORPORATE SOURCE: Graduate School of Biological Sciences, Nara Institute of Science and Technology, Ikoma, Nara, 630-0101, Japan

SOURCE: Biochemical and Biophysical Research Communications (2004), 323(1), 72-78

CODEN: BBRC9; ISSN: 0006-291X

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Wild watermelon (*Citrullus lanatus* sp.) has the ability to tolerate severe drought/high light stress conditions despite carrying out normal C3-type photosynthesis. Here, mRNA differential display was employed to isolate drought-responsive genes in the leaves of wild watermelon. One of the isolated genes, CLMT2, shared significant homol. with type-2 metallothionein (MT) sequences from other plants. The second-order rate constant for the reaction between a recombinant CLMT2 protein and hydroxyl radicals was estimated to be $1.2 \times 10^{11} \text{ M}^{-1} \text{ s}^{-1}$, demonstrating that CLMT2 had an extraordinary high activity for detoxifying hydroxyl radicals. Moreover, hydroxyl radical-catalyzed degradation of watermelon genomic DNA was effectively suppressed by CLMT2 in vitro. This is the first demonstration of a plant MT with antioxidant properties. The results suggest that CLMT2 induction contributes to the survival of wild watermelon under severe drought/high light stress conditions.

CC 3-3 (Biochemical Genetics)

Section cross-reference(s): 6, 11

ST sequence drought cDNA type 2 metallothionein *Citrullus* hydroxyl CLMT2

IT Gene, plant

RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)

(MT2; potent hydroxyl radical-scavenging activity of drought-induced type-2 metallothionein in wild watermelon)

IT *Citrullus lanatus*

Evolution

(hydroxyl radical-scavenging activity of drought-induced type-2 metallothionein in wild watermelon)

IT Metallothioneins

mRNA

RL: BSU (Biological study, unclassified); BIOL (Biological study) (hydroxyl radical-scavenging activity of drought-induced type-2 metallothionein in wild watermelon)

IT Proteins

RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)

(metallothionein type-2; hydroxyl radical-scavenging activity of drought-induced type-2 metallothionein in wild watermelon)

IT Protein sequences

cDNA sequences

(potent hydroxyl radical-scavenging activity of drought-induced type-2 metallothionein in wild watermelon)

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(FILE 'HOME' ENTERED AT 15:47:48 ON 18 SEP 2005)

FILE 'HCAPLUS' ENTERED AT 15:48:08 ON 18 SEP 2005

E KOHCHI TAKAYUKI/AU
 L1 59 SEA ABB=ON ("KOHCHI T"/AU OR "KOHCHI TAKAYUKI"/AU OR "KOHCHI
 TESTUO"/AU OR "KOHCHI TETSUNOBU"/AU OR "KOHCHI TETSUNOBU C O
 CANON KAB"/AU OR "KOHCHI TOSHIKATSU"/AU OR "KOHCHI TOYOFUMI"/AU
 OR "KOHCHI TSUNEO"/AU)
 E YOKOTA AKIHO/AU
 L2 138 SEA ABB=ON "YOKOTA AKIHO"/AU
 E AKASHI KINYA/AU
 L3 22 SEA ABB=ON "AKASHI KINYA"/AU
 E MIYAKE CHIKAHIRO/AU
 L4 45 SEA ABB=ON "MIYAKE CHIKAHIRO"/AU
 L5 1944297 SEA ABB=ON 1 AND 2 AND 3 AND 4
 L6 0 SEA ABB=ON L1 AND L2 AND L3 AND L4
 L7 224 SEA ABB=ON L1 OR L2 OR L3 OR L4
 L8 5 SEA ABB=ON L7 AND ?CITRULLINE?
 L9 ANALYZE L8 2 CT : 6 TERMS

FILE 'REGISTRY' ENTERED AT 15:56:03 ON 18 SEP 2005

E CITRULLINE/CN
 L10 1 SEA ABB=ON CITRULLINE/CN

FILE 'HCAPLUS' ENTERED AT 15:56:15 ON 18 SEP 2005

L11 3809 SEA ABB=ON L10
 L12 46 SEA ABB=ON L11 AND ?ANTIOXID?
 L13 31 SEA ABB=ON L12 AND (PRD<20020205 OR PD<20020205)

31 cit's from CA Plus

FILE 'AGRICOLA, BIOSIS, CABA, CROPB, CROPU, ESBIODBASE, GENBANK, IFIPAT, NTIS, SCISEARCH' ENTERED AT 15:57:53 ON 18 SEP 2005

L14 20 SEA ABB=ON L12
 L15 20 DUP REMOV L14 (0 DUPLICATES REMOVED)

FILE 'MEDLINE, BIOSIS, EMBASE' ENTERED AT 16:00:31 ON 18 SEP 2005

L16 39 SEA ABB=ON L13
 L17 37 DUP REMOV L16 (2 DUPLICATES REMOVED)
 L18 48 SEA ABB=ON L15 OR L17

48 cit's from above sets of d.b.'s

FILE HOME

FILE HCAPLUS

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L10 1 SEA FILE=REGISTRY ABB=ON CITRULLINE/CN
 L11 3809 SEA FILE=HCAPLUS ABB=ON L10
 L12 46 SEA FILE=HCAPLUS ABB=ON L11 AND ?ANTIOXID?
 L13 31 SEA FILE=HCAPLUS ABB=ON L12 AND (PRD<20020205 OR PD<20020205)

=> d ibib abs l13 1-31

L13 ANSWER 1 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:451474 HCAPLUS
 DOCUMENT NUMBER: 141:1258
 TITLE: Nitrosated compounds in methods of treating vascular diseases characterized by nitric oxide insufficiency
 INVENTOR(S): Loscalzo, Joseph; Vita, Joseph A.; Loberg, Michael D.; Worcel, Manuel
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 23 pp., Cont.-in-part of U.S. Ser. No. 679,257.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 5
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004105850	A1	20040603	US 2003-692724	20031027 <--
US 6635273	B1	20031021	US 2000-697317	20001027 <--
US 2004071766	A1	20040415	US 2003-679257	20031007 <--
PRIORITY APPLN. INFO.:			US 1999-162230P	P 19991029 <--
			US 2000-179020P	P 20000131 <--
			US 2000-697317	A1 20001027 <--
			US 2003-679257	A2 20031007

OTHER SOURCE(S): MARPAT 141:1258

AB The invention provides methods of treating and/or preventing vascular diseases characterized by nitric oxide insufficiency by administering a therapeutically effective amount of at least one nitrosated angiotensin-converting enzyme inhibitor, nitrosated beta-adrenergic blocker, nitrosated cholesterol reducer, nitrosated calcium channel blocker, nitrosated endothelin antagonist, nitrosated angiotensin II receptor antagonist, nitrosated renin inhibitor, and optionally at least one compound used to treat cardiovascular diseases and/or at least one **antioxidant**, or a pharmaceutically acceptable salt thereof, and/or at least one compound that donates, transfers or releases nitric oxide, elevates endogenous levels of endothelium-derived relaxing factor, stimulates endogenous synthesis of nitric oxide or is a substrate for nitric oxide synthase. The **antioxidant** may preferably be a hydralazine compound or a pharmaceutically acceptable salt thereof. The compound that donates, transfers or releases nitric oxide, elevates endogenous levels of endothelium-derived relaxing factor, stimulates endogenous synthesis of nitric oxide or is a substrate for nitric oxide synthase may preferably be isosorbide dinitrate and/or isosorbide mononitrate. The vascular diseases characterized by nitric oxide insufficiency include a cardiovascular disease and a disease resulting from oxidative stress. Nitric oxide action was shown to be impaired in the microvasculature of black hypertensive patients to a greater extent than in white hypertensive patients.

L13 ANSWER 2 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN